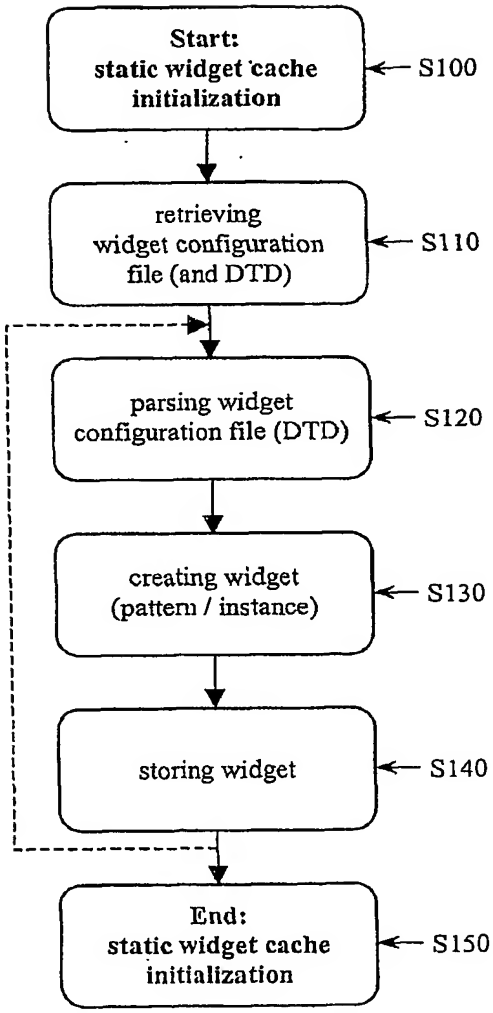
Start:
static widget cache
initialization
S100
retrieving
widget configuration
file (and DTD)
S110
parsing widget
configuration file (DTD)
S120
creating widget
(pattern / instance)
S130
storing widget
S140
End:
static widget cache
initialization
S150

Fig. 1a

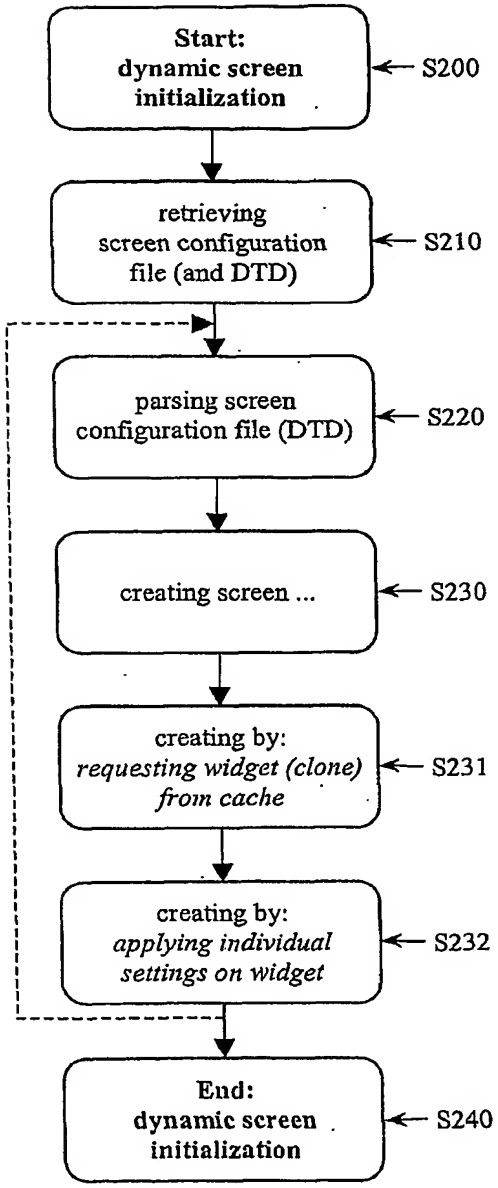
Start:
dynamic screen
initialization
S200
retrieving
screen configuration
file (and DTD)
S210
parsing screen
configuration file (DTD)
S220
creating screen ...
S230
creating by:
requesting widget (clone)
from cache
S231
creating by:
applying individual
settings on widget
S232
End:
dynamic screen
initialization
S240

Fig. 1b

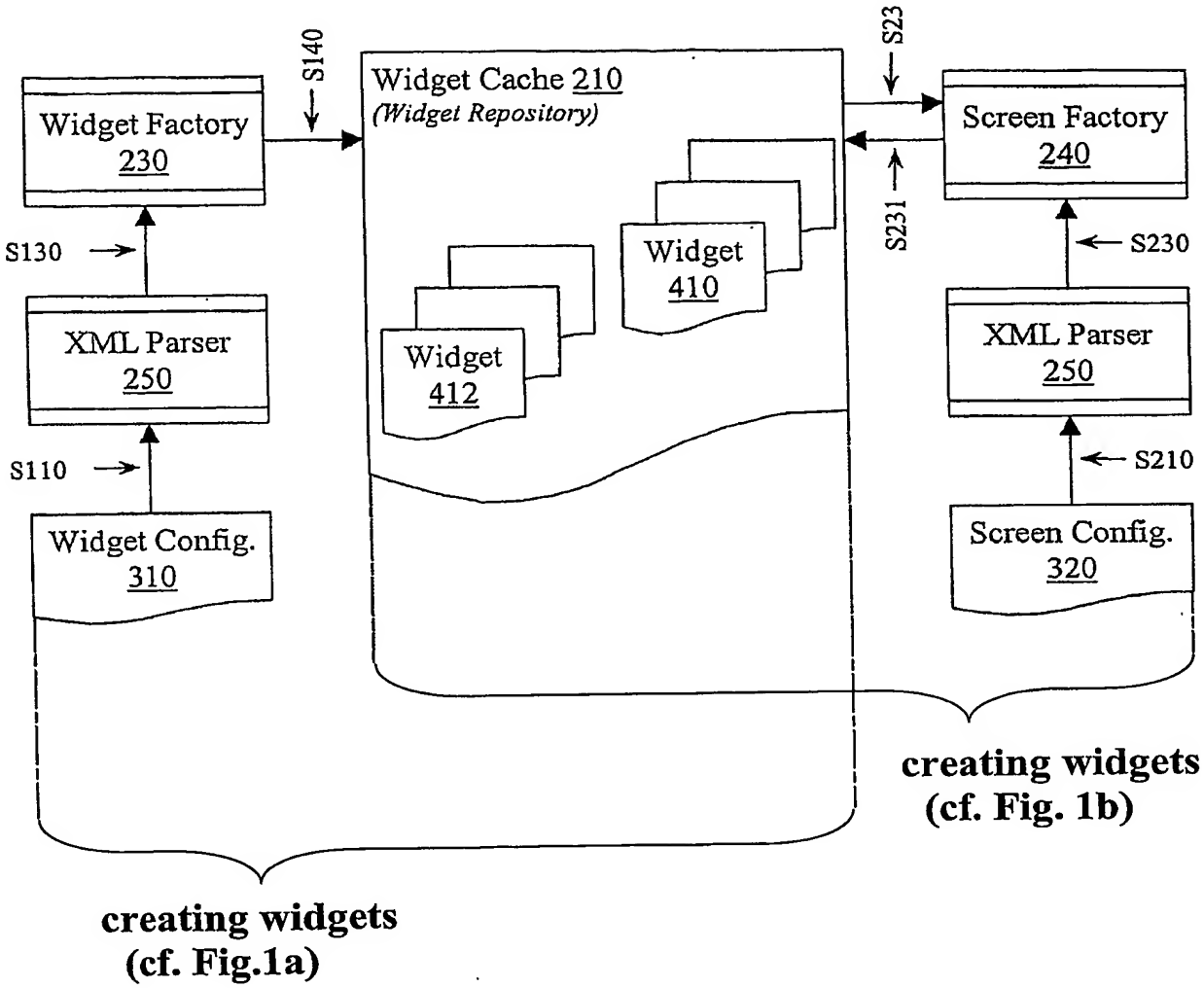
Widget Factory 230
S140
Widget Cache 210
(Widget Repository)
S23
Screen Factory 240
S231
S130
Widget 410
Widget 412
S230
XML Parser 250
XML Parser 250
S110
S210
Widget Config. 310
Screen Config. 320
creating widgets (cf. Fig. 1b)
creating widgets (cf. Fig.1a)

Fig.1c

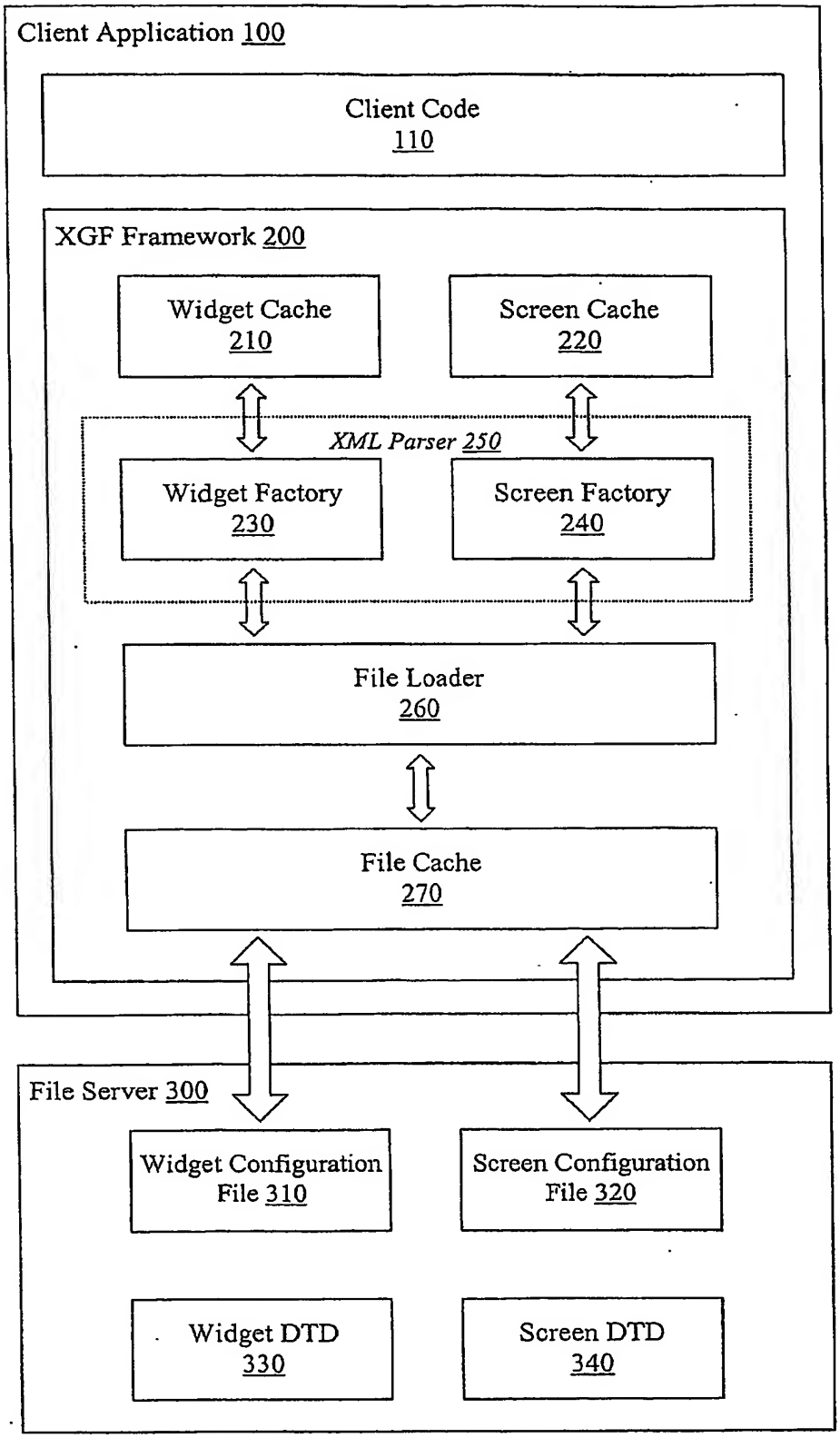
Client Application 100
Client Code
110
XGF Framework 200
Widget Cache
210
Screen Cache
220
XML Parser 250
Widget Factory
230
Screen Factory
240
File Loader
260
File Cache
270
File Server 300
Widget Configuration File 310
Screen Configuration File 320
Widget DTD
330
Screen DTD
340

Fig. 2

```
1:  <?xml version="1.0" encoding="ISO-8859-1"?>
2:  <!ELEMENT widgetdefinition (panel | button | listbox | textbox | label | gridlayout | flowlayout | tabpane)*>
3:  <!ATTLIST widgetdefinition
4:        laf (Metal | Motif | Windows | Mac) #REQUIRED
5:  >
6:  <!ELEMENT panel (flowlayout | bevelborder)>
7:  <!ATTLIST panel
8:        class CDATA #REQUIRED
9:        font CDATA #IMPLIED
10: >
11: <!ELEMENT label ((bevelborder)?, font?)*>
12: <!ATTLIST label
13:       class CDATA #REQUIRED
14:       font CDATA #IMPLIED
15: >
16: <!ELEMENT button ((bevelborder)?, font?)?>
17: <!ATTLIST button
18:       class CDATA #REQUIRED
19:       name CDATA #IMPLIED
20: >
21: <!ELEMENT textbox ((bevelborder)?, font?)*>
22: <!ATTLIST textbox
23:       class CDATA #REQUIRED
24:       name CDATA #IMPLIED
25: >
26: <!ELEMENT gridlayout EMPTY>
27: <!ATTLIST gridlayout
28:       class CDATA #REQUIRED
29: >
30: <!ELEMENT bevelborder EMPTY>
31: <!ATTLIST bevelborder
32:       class CDATA #FIXED "javax.swing.border.BevelBorder"
33:       border (LOWERED | RAISED) #REQUIRED
34: >
35: <!ELEMENT flowlayout EMPTY>
36: <!ATTLIST flowlayout
37:       class CDATA #REQUIRED
38: >
39: <!ELEMENT font EMPTY>
40: <!ATTLIST font
41:       name CDATA #REQUIRED
42:       size CDATA #REQUIRED
43:       style (PLAIN | BOLD | ITALIC) #REQUIRED
44:       class CDATA #FIXED "java.awt.Font"
45: >
46: <!ELEMENT tabpane (#PCDATA)>
47: <!ATTLIST tabpane
48:       class CDATA #REQUIRED
49: >
```

... continues ...

Fig. 3a

```
1:  <?xml version="1.0" encoding="ISO-8859-1"?>
2:  <!DOCTYPE widgetdefinition SYSTEM "WidgetDefinition.dtd">
3:  <widgetdefinition laf="Metal">
4:      <button class="javax.swing.JButton">
5:          <font name="TimesRoman" size="10" style="PLAIN"/>
6:      </button>
7:      <panel class="javax.swing.JPanel">
8:          <bevelborder border="LOWERED"/>
9:      </panel>
10:     <listbox class="javax.swing.JList">
11:         <font name="Arial" size="18" style="PLAIN"/>
12:         <bevelborder border="LOWERED"/>
13:     </listbox>
14:     <textbox class="javax.swing.JTextField">
15:         <font name="Arial" size="10" style="PLAIN"/>
16:         <bevelborder border="LOWERED"/>
17:     </textbox>
18:     <gridlayout class="java.awt.GridLayout"/>
19:     <flowlayout class="java.awt.FlowLayout"/>
20:     <label class="javax.swing.JLabel">
21:         <font name="Arial" size="10" style="BOLD"/>
22:         <bevelborder border="LOWERED"/>
23:     </label>
24:     <tabpane class="javax.swing.JTabbedPane"/>
25: </widgetdefinition>
```

Fig. 3b

```
1:  <?xml version="1.0" encoding="ISO-8859-1"?>
2:  <!ELEMENT screen (panel)>
3:  <!ATTLIST screen
4:        name CDATA #IMPLIED
5:        class CDATA #REQUIRED
6:  >
7:  <!ELEMENT panel ((gridlayout), (panel | label | textbox | button | listbox | table | tree)+)+>
8:  <!ATTLIST panel
9:        name CDATA #REQUIRED
10: >
11: <!ELEMENT label EMPTY>
12: <!ATTLIST label
13:       name CDATA #REQUIRED
14:       listener CDATA #IMPLIED
15:       layoutmanager CDATA #IMPLIED
16: >
17: <!ELEMENT textbox (#PCDATA)>
18: <!ATTLIST textbox
19:       dataobjectCDATA #REQUIRED
20:       attribute CDATA #REQUIRED
21:       name CDATA #REQUIRED
22:       listener NOTATION (ChangeListener | FocusListener) #IMPLIED
23:       layoutmanager CDATA #IMPLIED
24: >
25: <!ELEMENT button EMPTY>
26: <!ATTLIST button
27:       dataobjectCDATA #IMPLIED
28:       name CDATA #REQUIRED
29:       listener NOTATION (ChangeListener | FocusListener) #REQUIRED
30:       target NOTATION (screen | dataobject) #REQUIRED
31:       layoutmanager CDATA #IMPLIED
32: >
```

... continues ...

Fig. 4a

```
1:  <?xml version="1.0" encoding="ISO-8859-1"?>
2:  <!DOCTYPE screen SYSTEM "screen.dtd">
3:  <screen name="Sample Screen" class="xgx.screen.AccountView">
4:      <panel name="Accounts">
5:          <gridlayout row="3" col="3"/>
6:          <label name="Account"/>
7:          <textbox name="tb_account" attribute="account_no" dataobject="Accounts" listener="ChangeListener"/>
8:          <button name="Search" dataobject ="Accounts" listener="ChangeListener" target="screen"/>
9:          <label name="Contract"/>
10:         <listbox name="account_no" dataobject ="Accounts" attribute="account_no" listener="FocusListener"/>
11:         <panel name="test">
12:             <gridlayout row="1" col="2"/>
13:             <button dataobject="Accounts" name="Ok" target="screen" listener="ChangeListener"/>
14:             <button dataobject="Accounts" name="Cancel" target="dataobject" listener="FocusListener"/>
15:         </panel>
16:     </panel>
17: </screen>
```

Fig. 4b

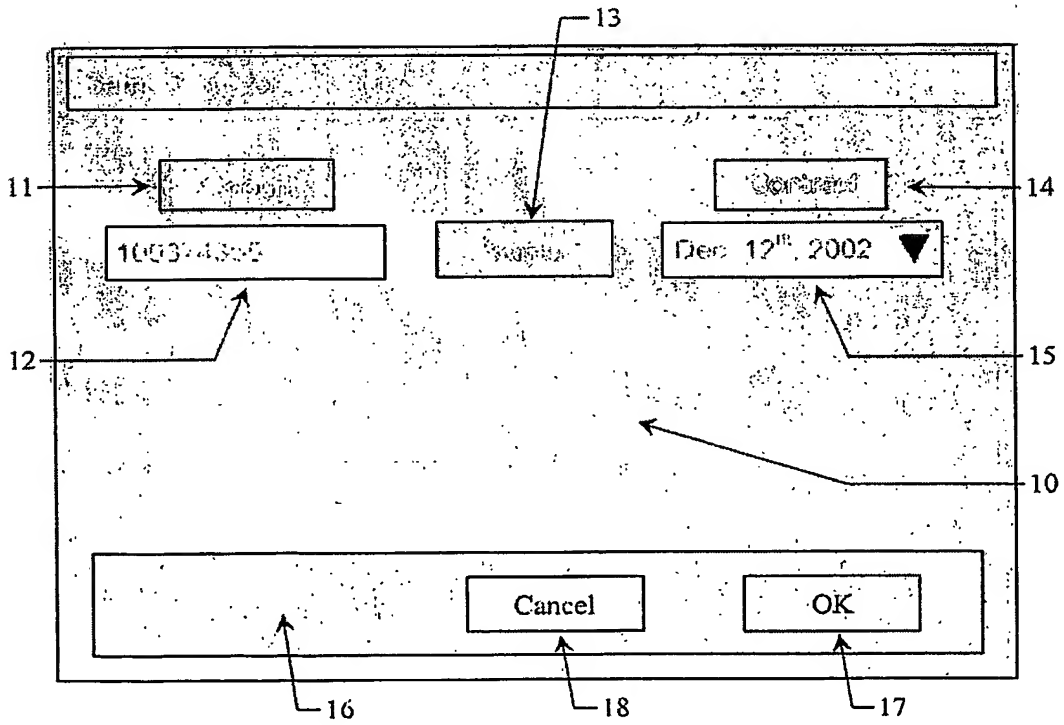

Fig. 4c

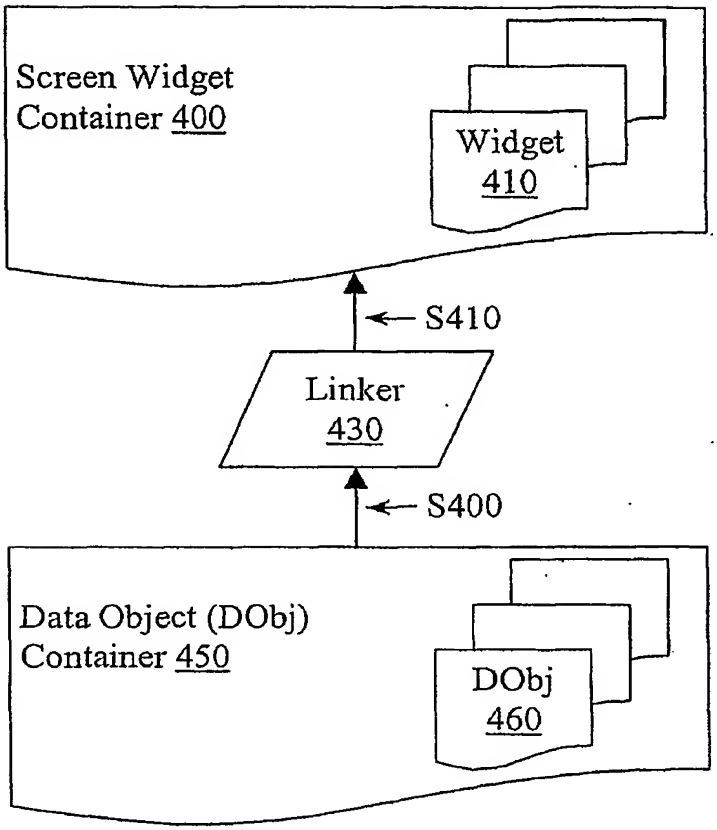
Screen Widget Container 400
Widget 410
S410
Linker 430
S400
Data Object (DObj) Container 450
DObj 460

Fig. 5a

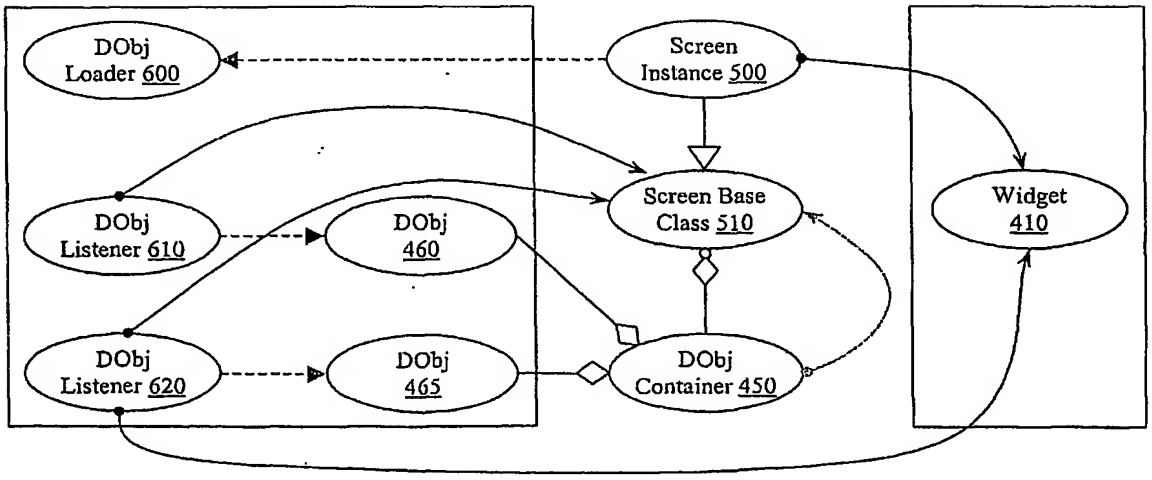
DObj Loader 600
Screen Instance 500
DObj Listener 610
DObj 460
Screen Base Class 510
Widget 410
DObj Listener 620
DObj 465
DObj Container 450

Fig. 5b